(one might say a phobia) when, as is inevitable, they find themselves using any word having teleological implications; such harmless, necessary words as function adaptation, regulation, failure, success.[1]

It was then shown that even purely descriptive knowledge of morphogenesis is still fragmentary and rudimentary; while, in respect to causal understanding or dynamic explanation, we remain utterly in the dark: for we have to put aside as absurd the vague claim that it is all achieved by the genes, a claim which, even if it were true, would be but a very small step towards causal explanation and understanding.[2]

In the second chapter we noticed three contemporary examples of biological materialism. First, the strait dogmatic mechanistic materialism of Hogben, who writes

[1] I cannot refrain from citing an illustration which I came upon while writing this paragraph in a much-used and highly authoritative textbook *(Recent Advances in Physiology,* 5th ed., 1936): * However diffident we may be in introducing teleological considerations, we must admit that the *object* of a reflex is not to activate some muscles, but primarily to produce a *purposive* movement of a limb or of an animal. The flexor reflex* for instance, is *designed* to withdraw the limb from a hurtful object.[5] The authorship of this statement is not revealed ; and this allows me to hold it up as a gem of ineptness and absurdity, illustrating the craven intimidation of the author in face of the prevalent taboo upon all recognition of teleological causation. (The italics are mine.)

[2] The best illustration of the wide difference that may obtain between our descriptive knowledge and causal explanation or understanding is afforded by the process of mitosis or division of the nucleus of the cell. This process, which involves precise and complex rearrangements, conjunctions and divisions of the chromosomes, as well as the astonishing formation of the bipolar

spindle, is known in the descriptive sense in great detail. (Wilson's book *The Cell* contains more than 500 figures, and fully two-thirds illustrate mitosis.) Yet in respect of explanation, we remain absolutely in the dark, as Wilson recognizes.